

Research to Operational: A Paradigm Shift for the Cropland Data Layer Program

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USDA/NASS



NASS Overview

Provider of timely, accurate, and useful statistics in service to U.S. agriculture

NASS - Data and Statistics - Microsoft Internet Explorer

Address: http://www.nass.usda.gov/Data_and_Statistics/index.asp

USDA United States Department of Agriculture
National Agricultural Statistics Service

The 2002 Census of Agriculture is the most comprehensive source of statistics portraying our nation's agriculture

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Browse NASS by Subject

- Crops and Plants
- Demographics
- Economics
- Environmental
- Livestock and Animals
- Charts and Maps
- Education and Outreach

Statistics by State

Select a State

Data and Statistics

Quick Stats (Agricultural Statistics Data Base)

NASS publishes U.S., state, and county level agricultural statistics for many commodities and data series. Quick Stats offers the ability to query by commodity, state(s) and year(s), providing the most up-to-date statistics including all revisions. The query dataset can be downloaded for easy use in your database or spreadsheet.

- Query our Quick Stats Data Base

Additional Crops County Resources

Maps of crops county estimates for acreage and yield are available from NASS as both CSV data files and maps.

County data from Quick Stats data is also available in pre-extracted data sets by year and by crop.

Census of Agriculture

To query Census of Agriculture data, choose from the Census years below. To view the Census publications, click here:

- Data Queries for 2002, select below:

Select a Census Query

Data Queries for 1997, 1992, 1987

Interactive Data

NASS provides a variety of tools for interacting with our Census datasets.

Interactive Statistical Maps Interactive Census Maps for 2002 Census Highlights

Table Lens Application for 1997 Census Data

Last modified: 12/30/05

NASS Home | [USDA.gov](http://www.usda.gov) | [FEDSTATS](http://www.fedstats.gov) | [Economics Statistics System \(ESS\)](http://www.economics.com) | [Site Map](http://www.site.gov) | [FOIA](http://www.foia.gov) | [Accessibility Statement](http://www.accessibility.gov) | [Privacy Policy](http://www.privacy.gov) | [Non-Discrimination Statement](http://www.non-discrimination.gov) | [Information Quality](http://www.information.gov) | [FirstGov](http://www.firstgov.gov) | [White House](http://www.whitehouse.gov)

2001 Wildlife Damage Survey

7.7 Percent of Crop Value Lost to Deer and Geese

Maryland farmers lost \$17.2 million of corn, soybeans and wheat to deer or geese during 2001, translates to Maryland farmers losing 7.7 percent of the crop value to deer and geese. Soybeans account for the greatest economic loss, totaling \$9.1 million, 11 percent. Corn losses were \$6.6 million, 5.8 percent and wheat \$1.5 million, 5.6 percent. Deer damage resulted in losses of \$13.6 million, 6.1 percent, while geese losses were \$3.6 million, 1.6 percent.

Production losses totaled 6.0 million bushels. Corn losses were 3.2 million bushels, soybean losses are 2.2 million bushels and wheat accounted for 0.6 million bushels. Production losses to deer were 4.7 million bushels and geese 1.3 million bushels.

In terms of yield, losses to deer were most severe in Central and Western Maryland, while geese damage greater on the Eastern Shore. Corn yield losses of 9.6 bushels per acre and 7.4 bushels per acre were reported in Central and Western Maryland, respectively. The Lower Eastern Shore reported the highest soybean loss of 6.1 bushels per acre.

Sixty-two percent of farms reported deer or geese damage to one or more crop. Damage was reported on 27 percent of farms raising corn, 58 percent of farms growing soybeans and 27 percent of farms with wheat.

Maryland 2001 Crop Loss from Deer

Region	Crop	Acre	Harvested Yield (bushels)	Average Yield Loss (bushels)	Production Loss (bu)	Economic Loss (\$)
Western Maryland	Corn	5,500	114.9	7.4	40,700	83
	Soybeans	300	36.7	6.1	1,800	36
	Wheat	200	45.2	2.3	460	9
Central Maryland	Corn	115,200	58.4	9.6	1,101,200	2,473
	Soybeans	92,200	34.0	3.9	360,780	1,479
	Wheat	38,300	63.0	3.3	126,290	319
Southern Maryland	Corn	25,800	112.9	4.9	146,200	299
	Soybeans	43,200	38.0	3.3	142,260	354
	Wheat	16,900	57.0	0.9	14,400	36
Upper Shore	Corn	157,200	159.2	5.1	800,700	1,611
	Soybeans	232,000	39.8	2.4	856,800	2,232
	Wheat	86,500	64.0	1.1	99,150	213

USDA NEWS RELEASE

NATIONAL AGRICULTURAL STATISTICS SERVICE
United States Department of Agriculture • Washington, DC 20250
Ag Statistics Hotline: (800) 727-9540 • www.nass.usda.gov

Contact: Ellen Dougherty, (202) 690-8122
Jeff Geuder, (202) 720-2127

USDA FORECASTS RECORD-SETTING CORN CROP FOR 2007

Washington, Aug. 10, 2007 – U.S. history in 2007, according to the U.S. Department of Agriculture's National Agricultural Statistics Service, is that the nation will produce a record 13.1 billion bushels, 10.6 percent more than the 11.8 billion bushels produced in 2006. Based on conditions as of August 10, 2007, the U.S. corn crop is projected to be 3.7 billion bushels larger than last year's crop, up 3.7 billion bushels from last year's 10.4 billion bushels behind the 160.4 bushels per acre national average. Yield forecasts are higher than last year's 135 bushels per acre. Delta. Meanwhile, hot, dry conditions in the Midwest and eastern Corn Belt, Ohio Valley and the Southeast are expected to reduce soybean and wheat yields.

WISCONSIN AGRICULTURAL STATISTICS SERVICE
P.O. Box 8034 Madison, WI 53708-8034
In cooperation with WI Department of Agriculture, Trails and Forestry Protection

2002 Dairy Producer Opinion Survey

November 2002

Wisconsin Milk Production To Recover

Milk production is expected to increase in Wisconsin during the next five years according to a survey conducted by the Wisconsin Agricultural Statistics Service. This statewide survey of producers asked for their plans with the assumption that milk prices for the next five years will be at the same level as the past five years. The survey was conducted during May and June 2002.

Based on the survey, 60 percent of producers expect to keep the same herd size, 20 percent plan to increase herd size, and 20 percent intend to discontinue milking by 2007. Actual results will depend on future milk prices, input prices, financing availability, crop yields, and other factors.

The number of herds projected for 2007 shows that the diversity of small to large herds will continue. The most prevalent herd size will remain at 50 to 99 cows.

2002 Census of Agriculture - SVG Interactive Mapping - United States - Microsoft Internet Explorer

National Agricultural Statistics Service 2002 Census of Agriculture

United States | All data items are from Chapter 2 - Table 1. Area Summary Highlights: 2002 Selected crops harvested - Land in orchards (acres)

State: United States - County Level | Data Item: Selected crops harvested - Land in orchards (acres)

Data

United States Total: 5,330,439

State Total:

County Total:

County Total:

Download data as CSV | XML | PDF

Help | Print | Return to USAR

Legend

Scale: National | Zero or Data Withheld

- <= 20,000
- 20,001 to 40,000
- 40,001 to 60,000
- 60,001 to 80,000
- 80,001 to 100,000
- 100,001 >=

Comparisons: 6

Color: Green

Source: USDA-NASS 2002 Census of Agriculture © USDA-NASS 2005-2006

Navigate: Mouse-over a specific state/county to view the state/county level data. Right click to zoom (option-click for MAC users). Hold the Alt key and click+drag to pan. For additional assistance with this application, [click here to view the support page.](#)

All Milk Price, Wisconsin Annual Average, 1985 - 2002 \$/cwt

Wisconsin Dairy Herds by Herd Size

Milk cow herd size	May 2002 herds	May 2007 herds (projected) %	Change 2007/2002
1-29	2,800	1,440	-45
30-49	4,700	3,440	-27
50-99	7,400	5,600	-24
100-199	1,900	2,080	+9
200-499	700	900	+29
500+	200	440	+120
Total	17,500	15,900	-20

1/7 The May 2007 projection is based on farmers' opinions May-June 2002, with the assumption that milk prices for the next five years will be at the same level as the past five years.

Wisconsin Dairy Farmer Plans for May 2007 1/7 by Herd Size

Herds	Keep same herd size	Increase herd size	Discontinue milking
Number	Percent	Percent	Percent
2,600	47	17	36
4,700	71	9	20
7,400	85	19	18
1,900	83	37	10
700	33	59	8
200	22	78	0
17,500	62	29	20

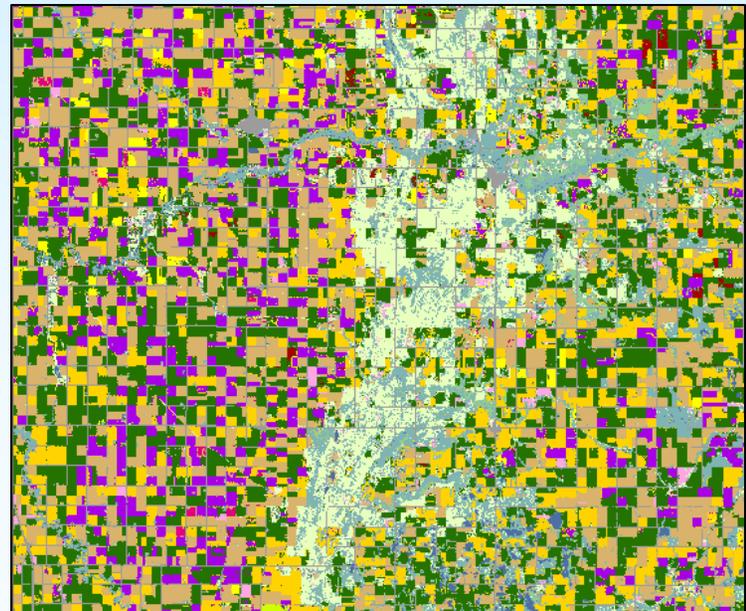
1/7 The May 2007 projection is based on farmers' opinions May-June 2002, with the assumption that milk prices for the next five years will be at the same level as the past five years.

Percent of Herds by Size Group 2007 Projection

1/7 The May 2007 projection is based on farmers' opinions May-June 2002, with the assumption that milk prices for the next five years will be at the same level as the past five years.

Cropland Data Layer Program Objectives

- “Census by Satellite”
 - Without area duplication
 - Major corn and soybean regions
- Provide timely, accurate, useful independent estimates
 - Measurable error
 - County and state level
- Deliver estimates months earlier
 - October estimates (Operational) to meet Agricultural Statistics Board deadline
 - December estimates (Research)



Acreage estimates are essential for.....

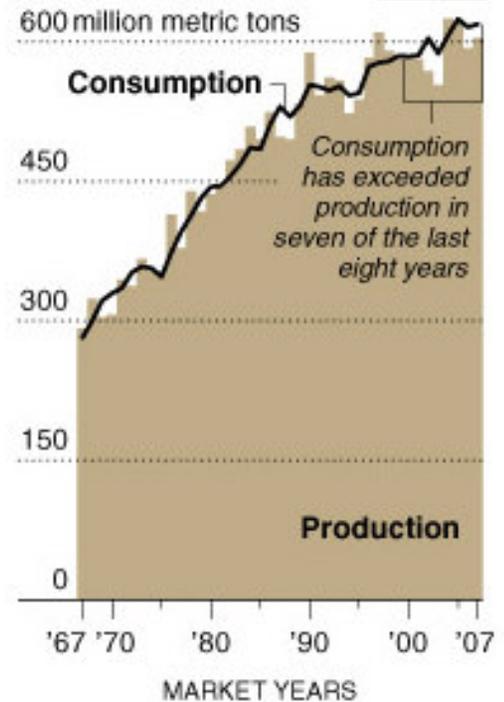
- the smooth operation of Federal farm programs.
- farmers who rely on them in making production and marketing decisions.



A Scarcity of Wheat

Droughts and competition from other crops have suppressed wheat production in recent years, even as global demand has risen. Adjusted for inflation, wheat prices are hitting their highest levels in a quarter-century.

SUPPLY AND DEMAND

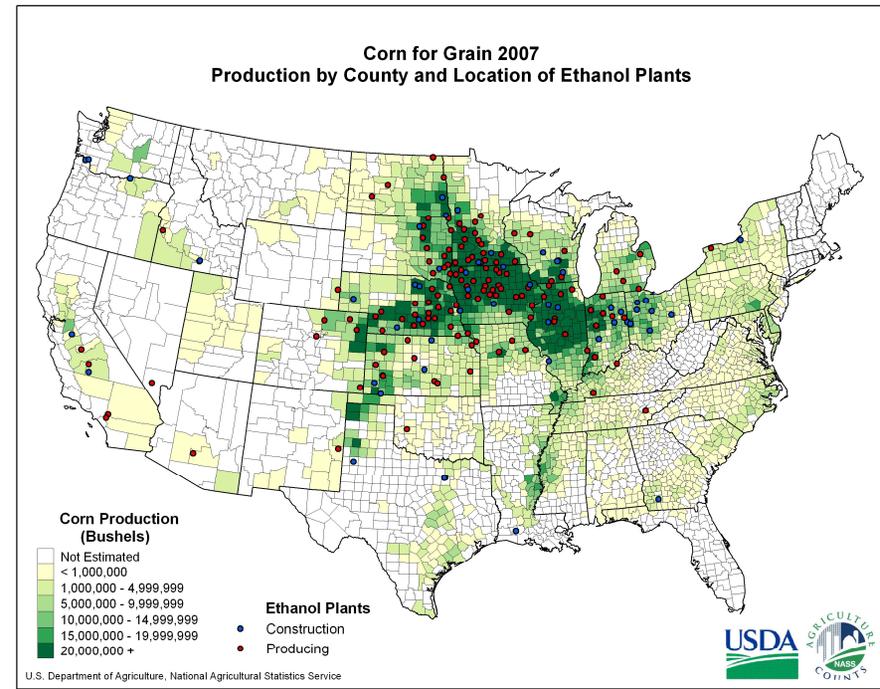


Acreage estimates are essential for.....

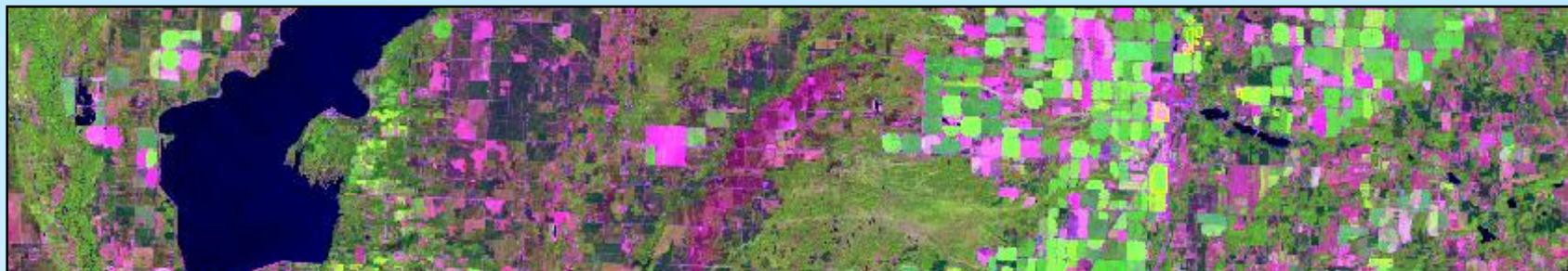
- planning and administering Federal and State programs in areas such as conservation, environmental quality, trade and food safety.
- agribusiness including: the transportation sector, storage companies, banks and other lending institutions, commodity traders and food processors.



J. D. Pooley for The New York Times



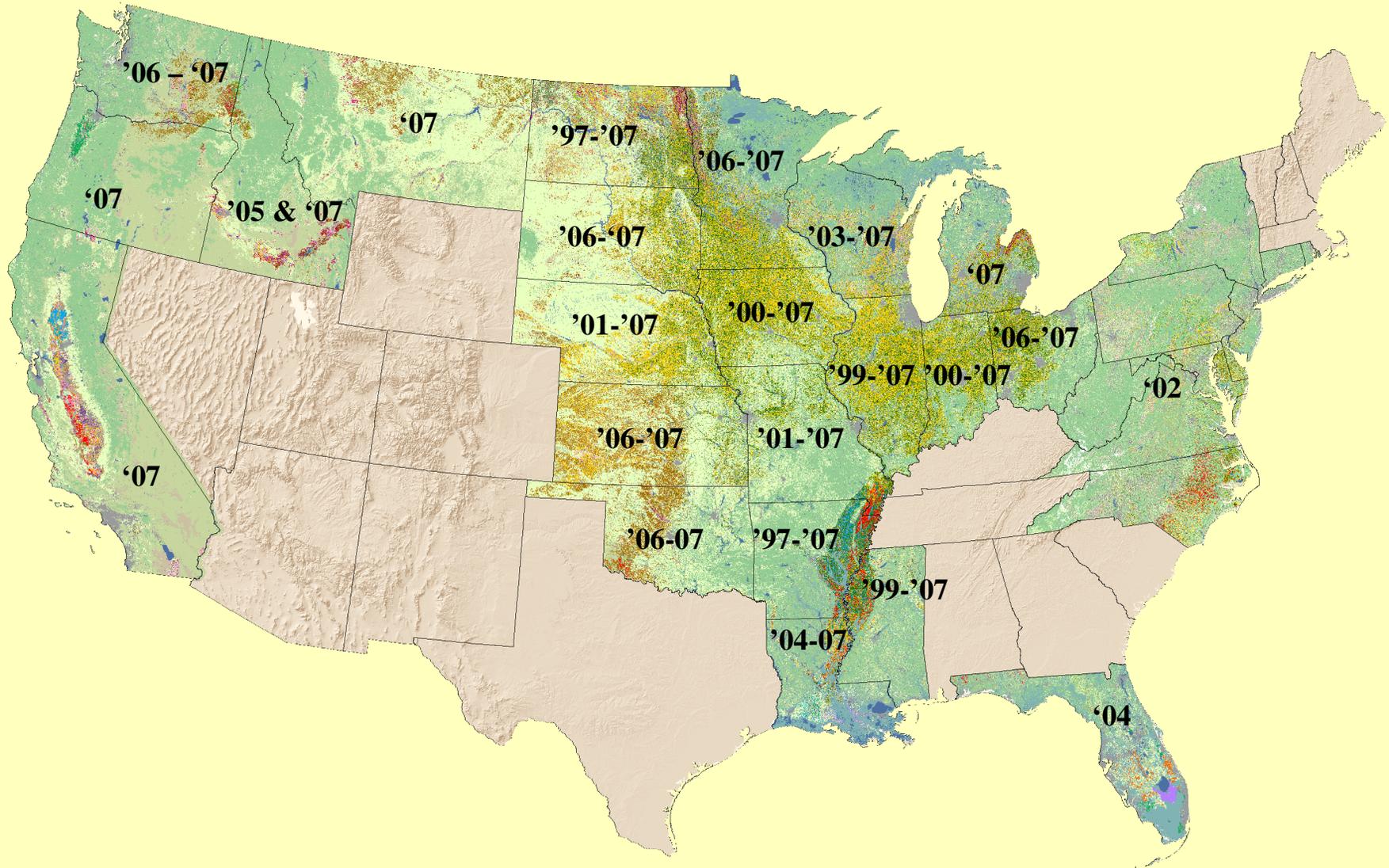
Agenda



- Acreage Program Updates
 - Advanced Wide Field Sensor (AWiFS)
 - Ground truth: FSA/CLU + 578 & NLCD
 - Ancillary data sets
 - Commercial software suite
- What's next



Cropland Data Layers 1997 - 2007



Cropland Data Layer Components



- A WiFS sensor

IRS Resourcesat-1 A WiFS Imagery

340 km swath per head
740 km combined

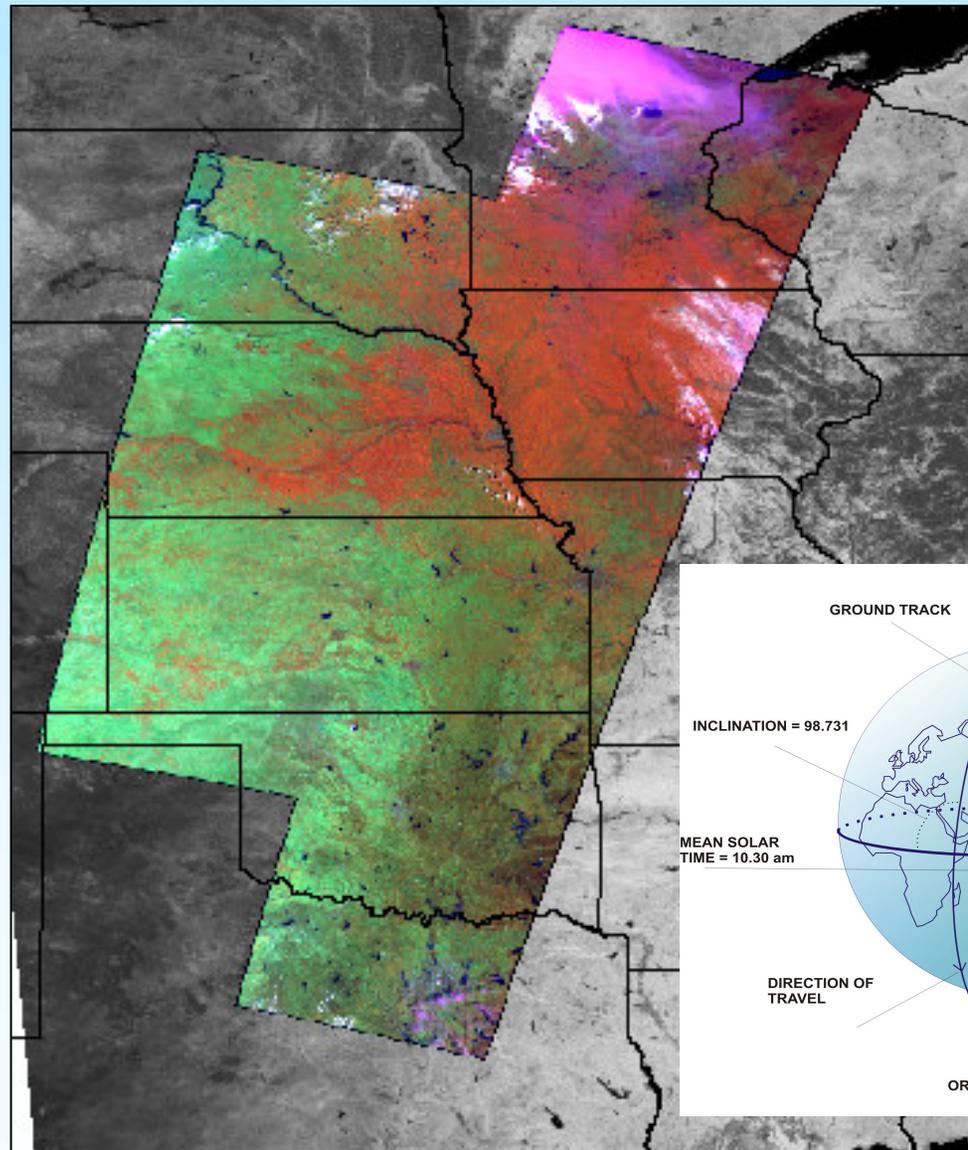
5-day revisit

4 spectral bands

- B2: 0.52 - 0.59
- B3: 0.62 - 0.68
- B4: 0.76 - 0.86
- B5: 1.55 - 1.7

56 m nadir/70 m field edges

Data provided by Arctic Slope
Regional Corporation

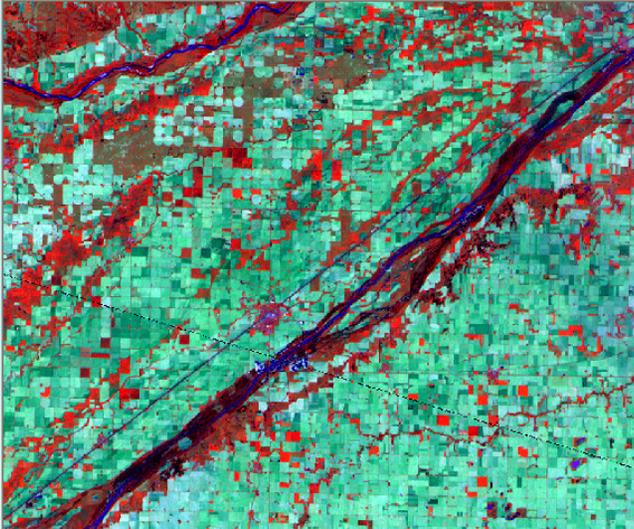


13 Aug 2007

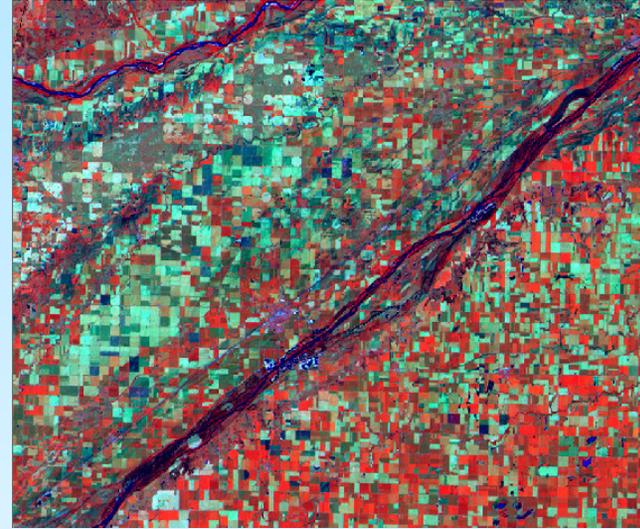


Department of Space
Indian Space Research Organisation

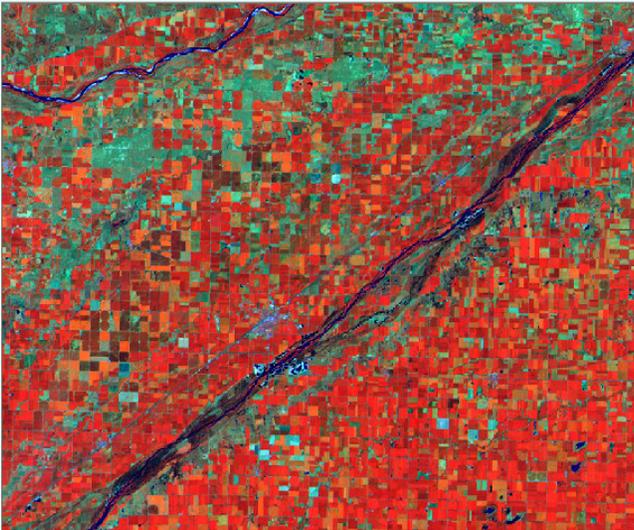
AWiFS Imagery Time Series



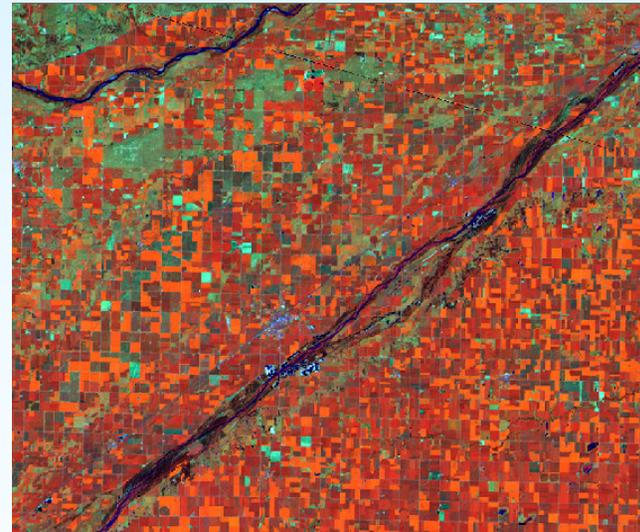
May 18



June 21



July 15



August 27

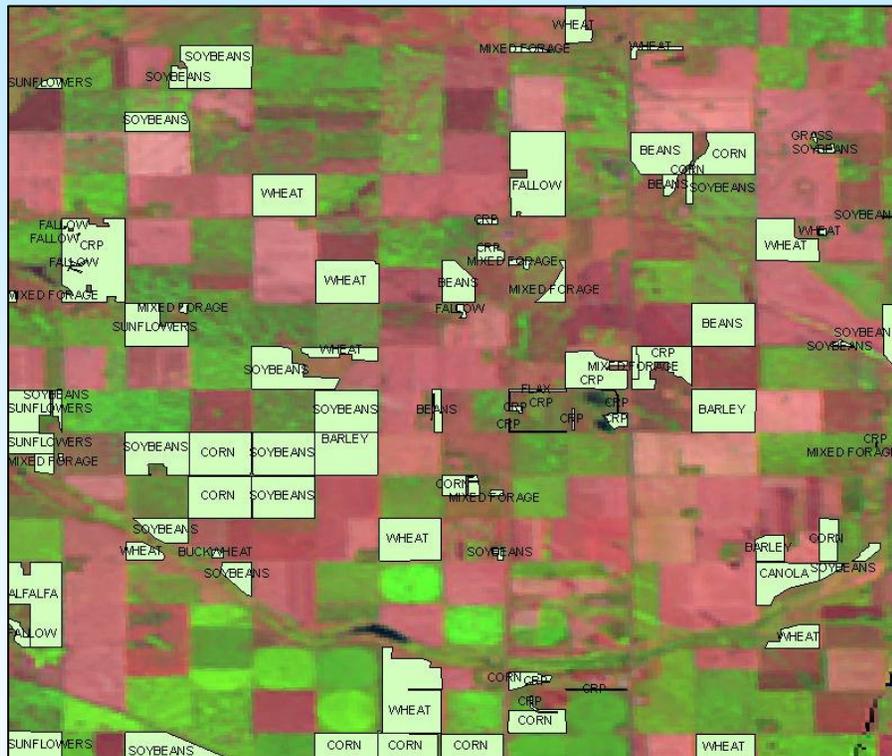
Cropland Data Layer Components



- A WiFS sensor
- Common Land Unit/578 Admin Data
 - USDA/Farm Service Agency
 - Training/testing datasets
 - NLCD 2001 (non agriculture)
 - Ancillary datasets
 - MODIS, NED, NLCD Canopy, NLCD Impervious

Ground Truth - Agriculture

- Farm Service Agency (FSA)
 - Common Land Unit (CLU)
 - 578 reporting data



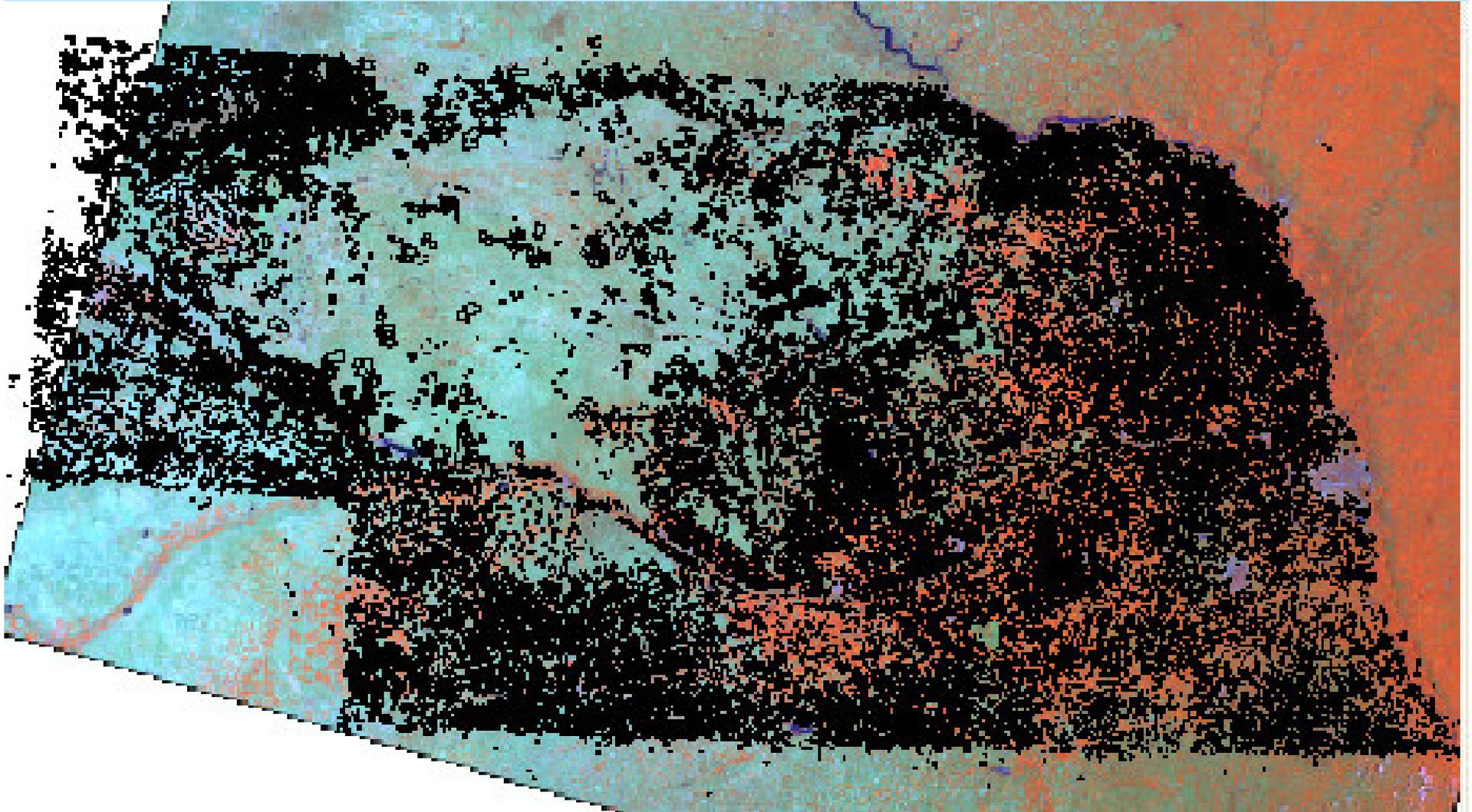
FSA



NASS

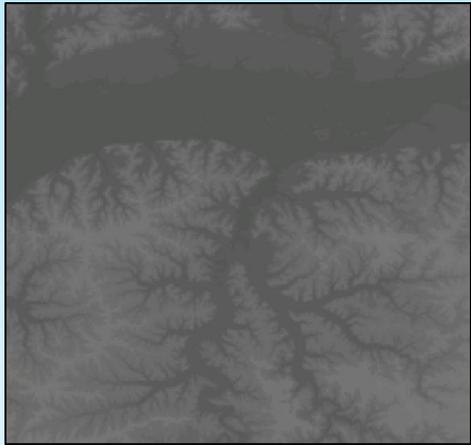
NASS June Agricultural Survey (JAS) data still
used for acreage estimation

Ground Truth - Agriculture

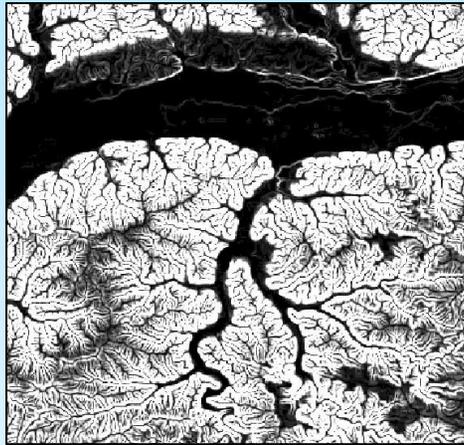


NASS June Agricultural Survey (JAS) data still
used for acreage estimation

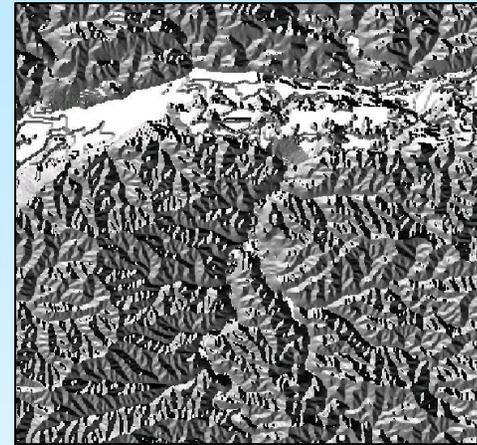
Ancillary Data – USGS Products



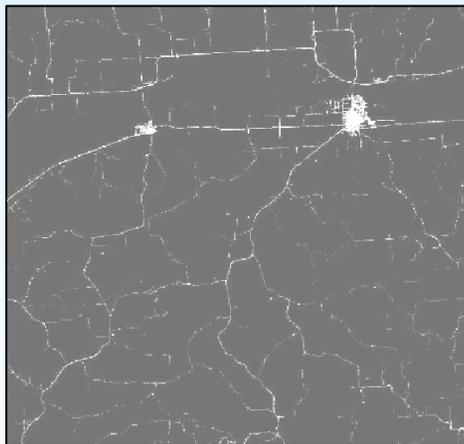
Elevation



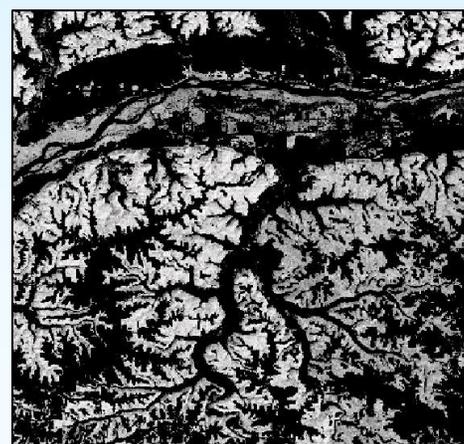
Slope



Aspect

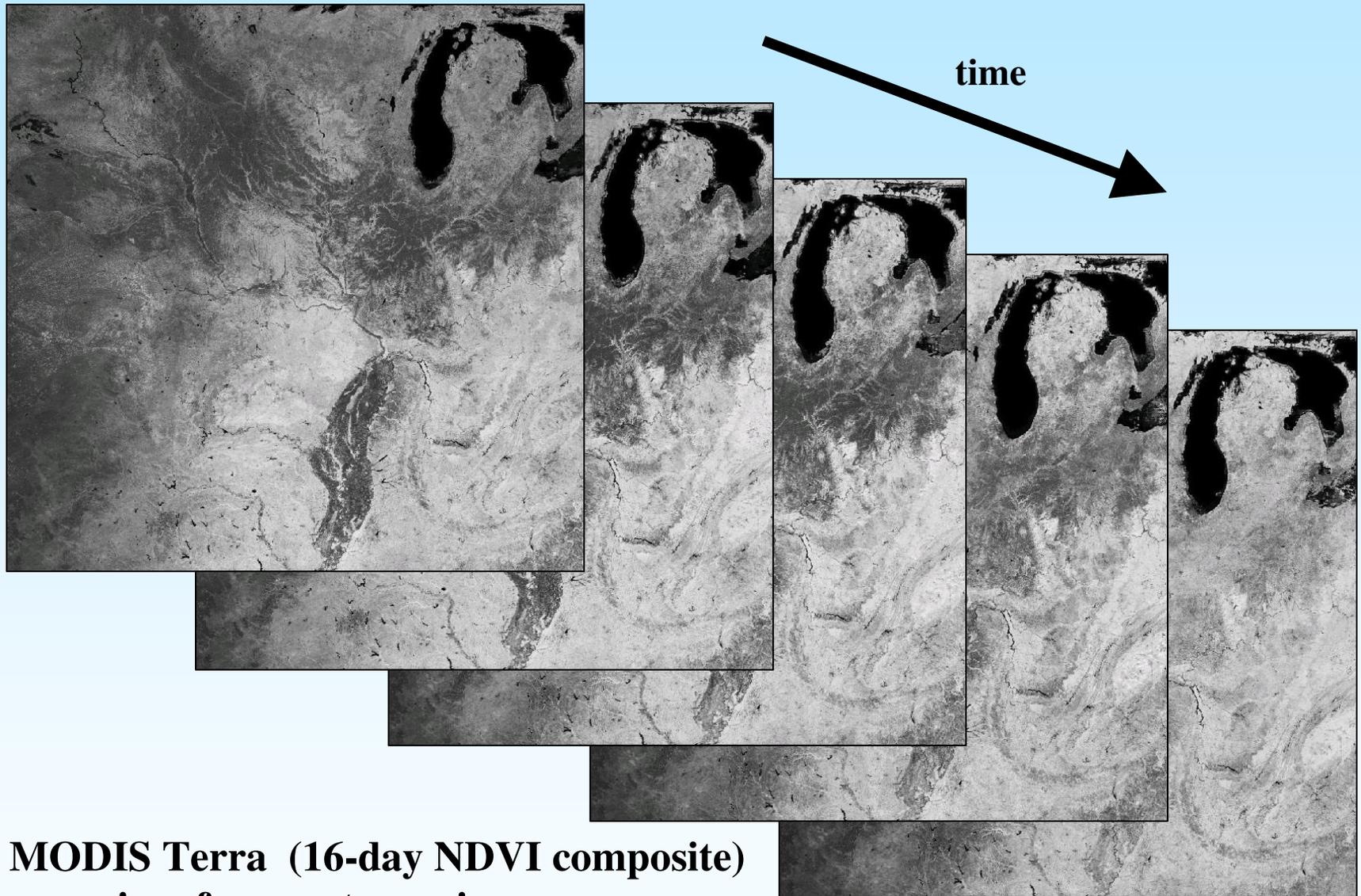


Impervious



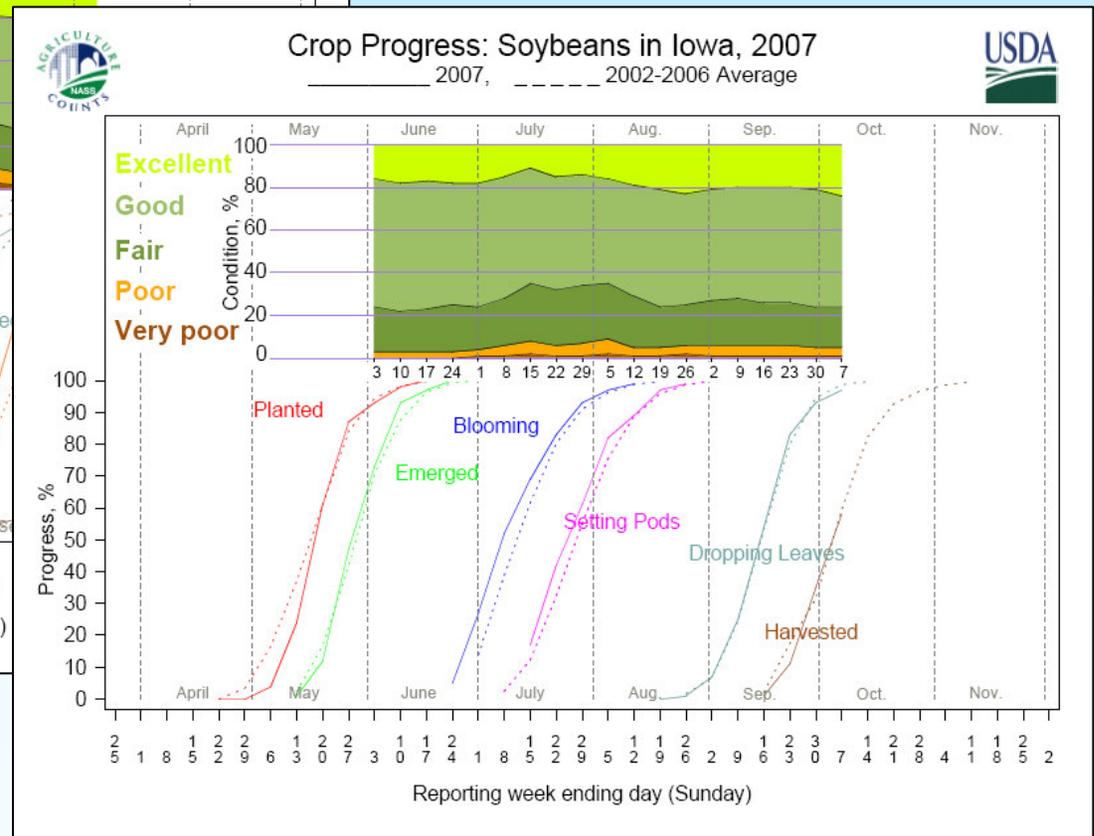
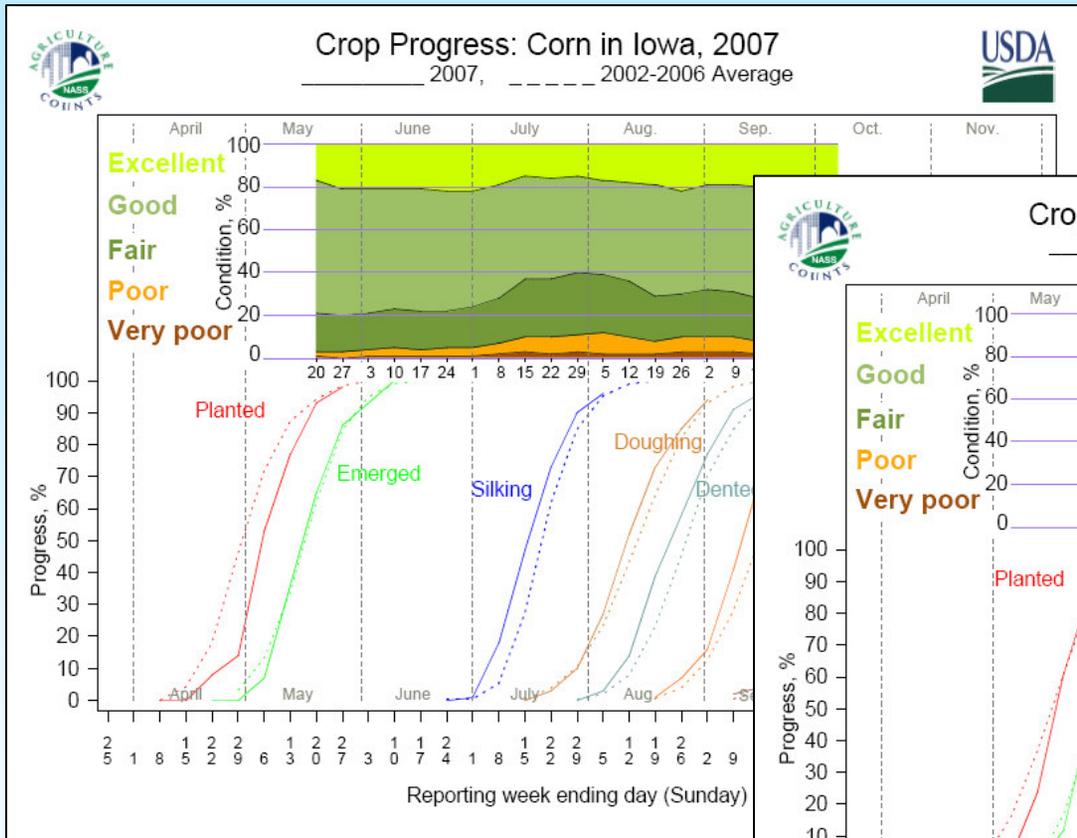
Canopy

MODIS NDVI Imagery



NASA MODIS Terra (16-day NDVI composite)
Time series of current growing season
Fall scenes from previous year

Image Timing



<http://www.nass.usda.gov/Charts and Maps/Crop Progress & Condition/>

Cropland Data Layer Components



- A WiFS sensor
- Common Land Unit/578 Admin Data
 - USDA/Farm Service Agency
- Ancillary data sets
- Commercial software suite

Commercial Software Suite

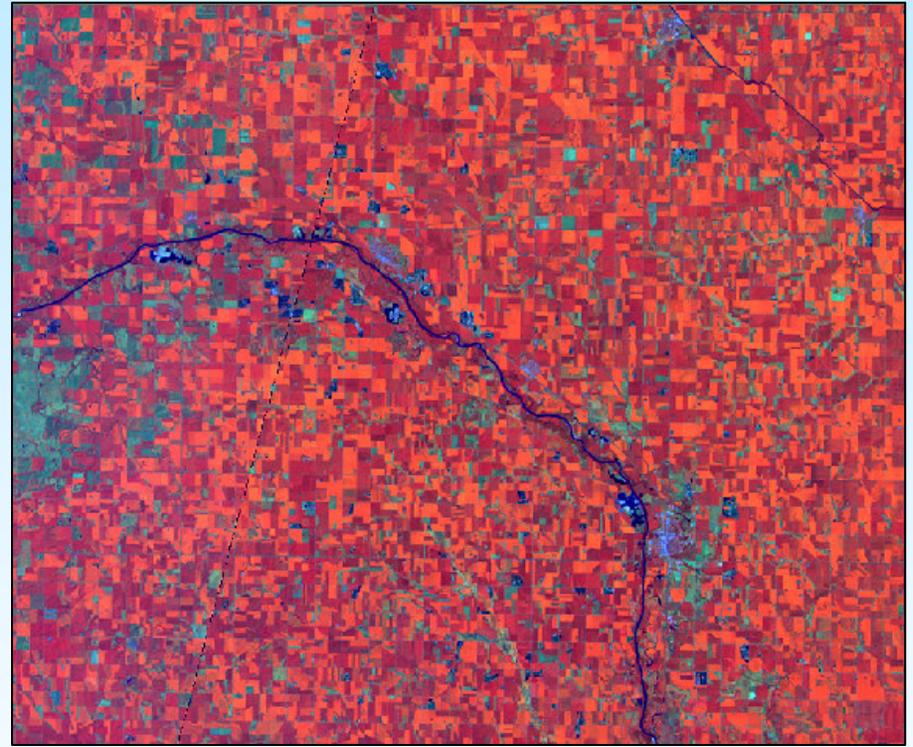
- Imagery Preparation
 - Leica Geosystems ERDAS Imagine
- Image classification
 - Decision tree software
 - See5.0 www.rulequest.com
- Ground Truth Preparation
 - ESRI ArcGIS
- Acreage Estimation
 - SAS/IML workshop



Example Classification Subset



CDL Classification



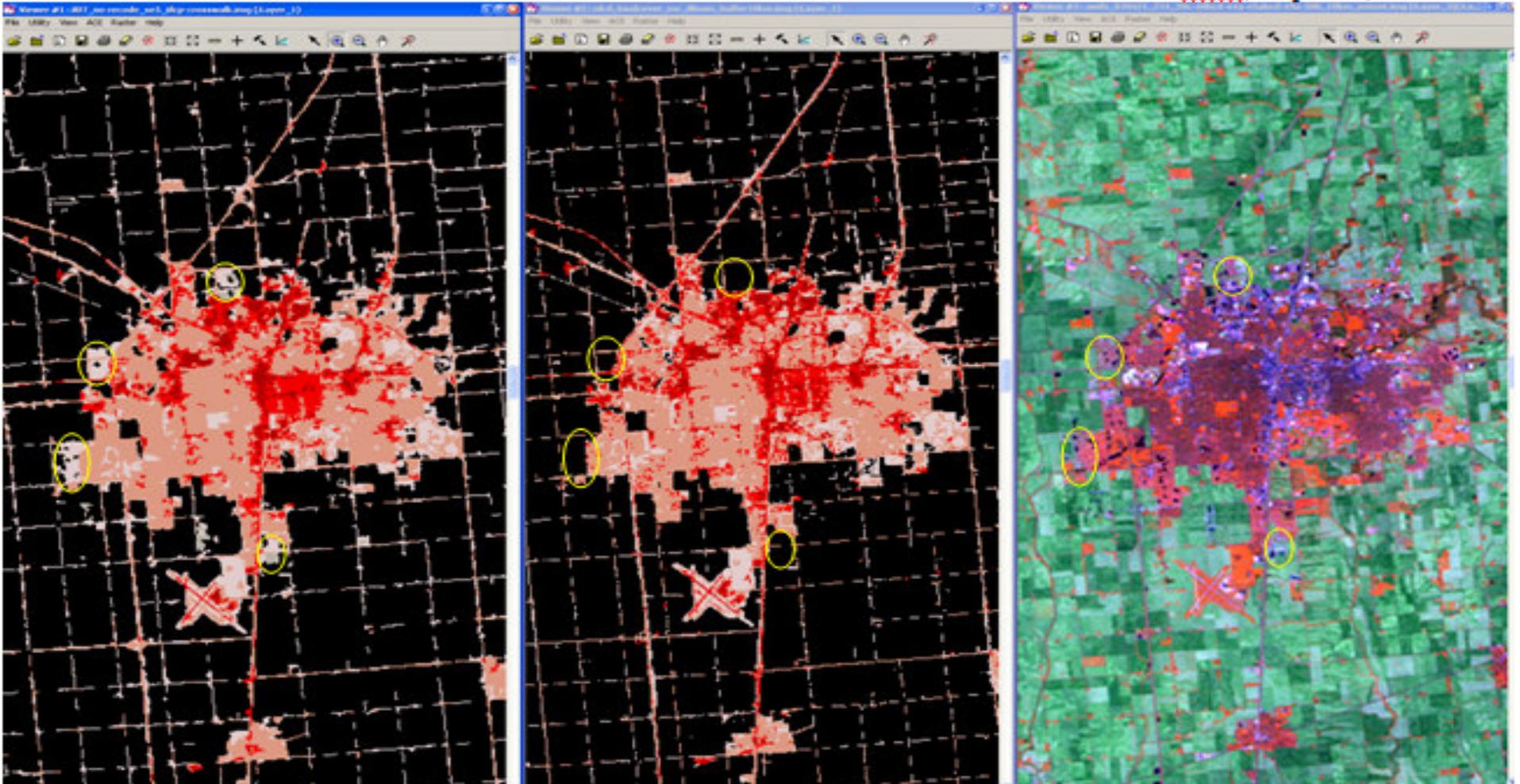
Resourcesat-1 AWiFS, 13 Aug 2007

Non Ag NLCD Updates (urban sprawl)

IL07 CDL

NLCD 2001

Awifs - April 21, 2007

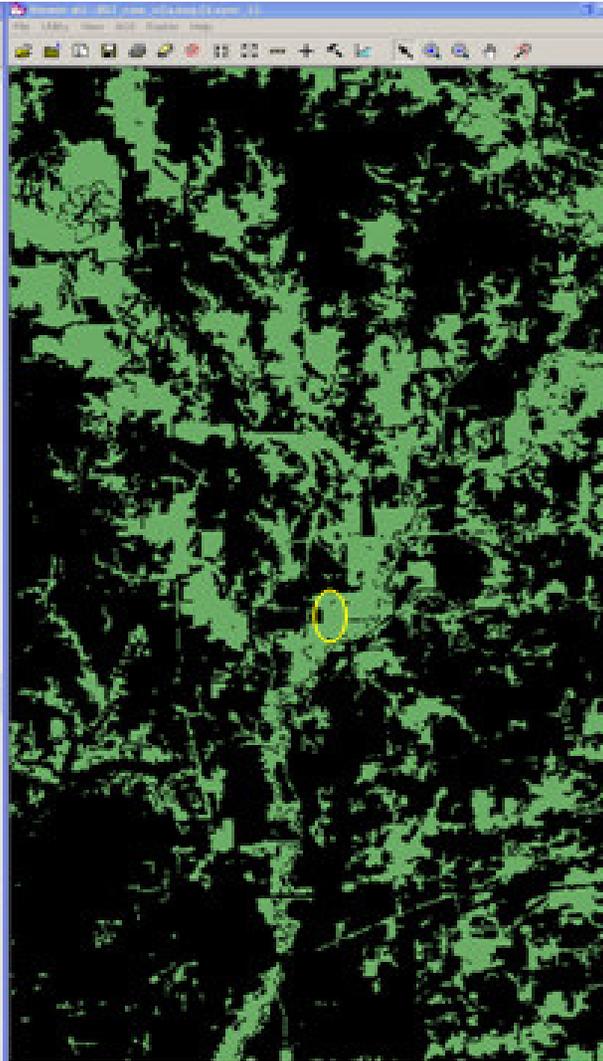
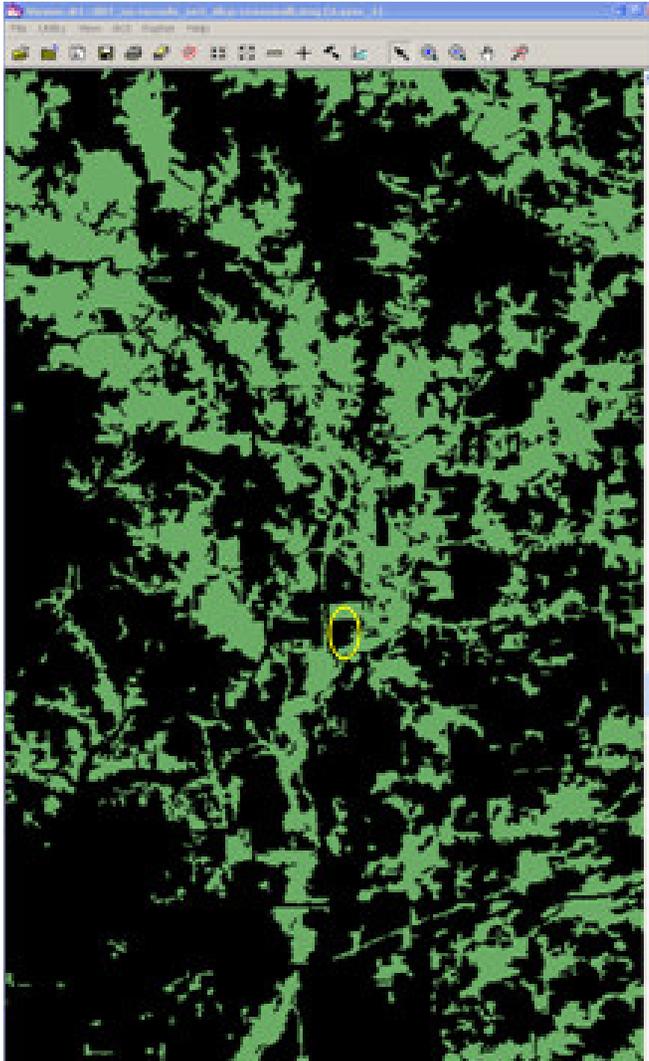


Non Ag NLCD Updates (forest clearing)

IL07 CDL

NLCD 2001

Awifs - April 21, 2007



Accuracy Assessment

```

Crop-specific covers only *Correct Accuracy Error Kappa
-----
OVERALL ACCURACY          740009  93.56%  6.44%  0.8488
  
```

Cover Type	Attribute Code	*Correct Pixels	Producer's Accuracy	Omission Error	Kappa	User's Accuracy	Commission Error	Cond'1 Kappa
Corn	1	28358	95.36%	4.64%	0.9528	93.08%	6.92%	0.9297
Cotton	2	11757	95.08%	4.92%	0.9505	94.59%	5.41%	0.9456
Rice	3	2	28.57%	71.43%	0.2857	66.67%	33.33%	0.6667
Sorghum	4	21251	89.85%	10.15%	0.8972	92.46%	7.54%	0.9236
Soybeans	5	12885	86.15%	13.85%	0.8604	88.61%	11.39%	0.8851
Sunflowers	6	102	89.47%	10.53%	0.8947	99.03%	0.97%	0.9903
Peanuts	10	512	90.14%	9.86%	0.9014	92.09%	7.91%	0.9208
Barley	21	785	71.95%	28.05%	0.7194	97.39%	2.61%	0.9739
Durum Wheat	22	48	42.86%	57.14%	0.4286	100.00%	0.00%	1.0000
Spring Wheat	23	205	56.47%	43.53%	0.5647	99.03%	0.97%	0.9903
Winter Wheat	24	580437	97.54%	2.46%	0.9631	94.00%	6.00%	0.9117
Other Small Grains	25	1120	56.97%	43.03%	0.5694	93.57%	6.43%	0.9356
Win Wht /Soyb Dbl Crop	26	14758	79.51%	20.49%	0.7932	90.06%	9.94%	0.8996
Rye	27	13249	66.90%	33.10%	0.6664	91.39%	8.61%	0.9129
Oats	28	2941	64.85%	35.15%	0.6479	95.18%	4.82%	0.9517
Millet	29	439	77.02%	22.98%	0.7701	96.48%	3.52%	0.9648
Canola	31	337	75.90%	24.10%	0.7590	98.83%	1.17%	0.9883
Alfalfa	36	19653	88.21%	11.79%	0.8807	91.78%	8.22%	0.9168
Dry Beans	42	115	88.46%	11.54%	0.8846	93.50%	6.50%	0.9350
Potatoes	43	49	96.08%	3.92%	0.9608	100.00%	0.00%	1.0000
Other Crops	44	50	45.87%	54.13%	0.4587	80.65%	19.35%	0.8064
Misc Veggies & Fruits	47	33	54.10%	45.90%	0.5410	86.84%	13.16%	0.8684
Watermelon	48	24	77.42%	22.58%	0.7742	85.71%	14.29%	0.8571
Peas	53	188	72.59%	27.41%	0.7258	96.91%	3.09%	0.9691
Clover/Wildflowers	58	21	36.21%	63.79%	0.3621	75.00%	25.00%	0.7500
Fallow/Idle Cropland	61	30612	69.78%	30.22%	0.6922	90.48%	9.52%	0.9025
Peaches	67	9	36.00%	64.00%	0.3600	100.00%	0.00%	1.0000
Other Tree Nuts & Fruit	71	69	33.82%	66.18%	0.3382	83.13%	16.87%	0.8313

*Correct Pixels represents the total number of independent validation pixels correctly identified in the error matrix.

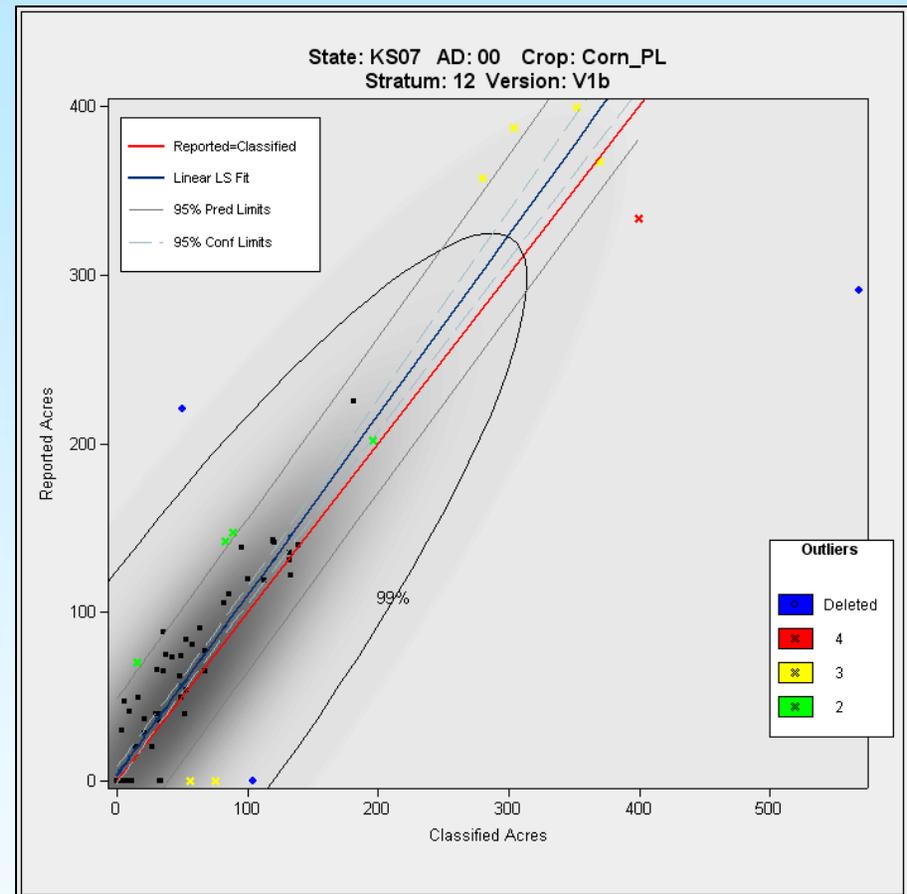
Regression-based Acreage Estimator

Regression used to relate categorized pixel counts to the ground reference data

- (X) – Cropland Data Layer (CDL) classified acres
- (Y) – June Agricultural Survey (JAS) reported acres

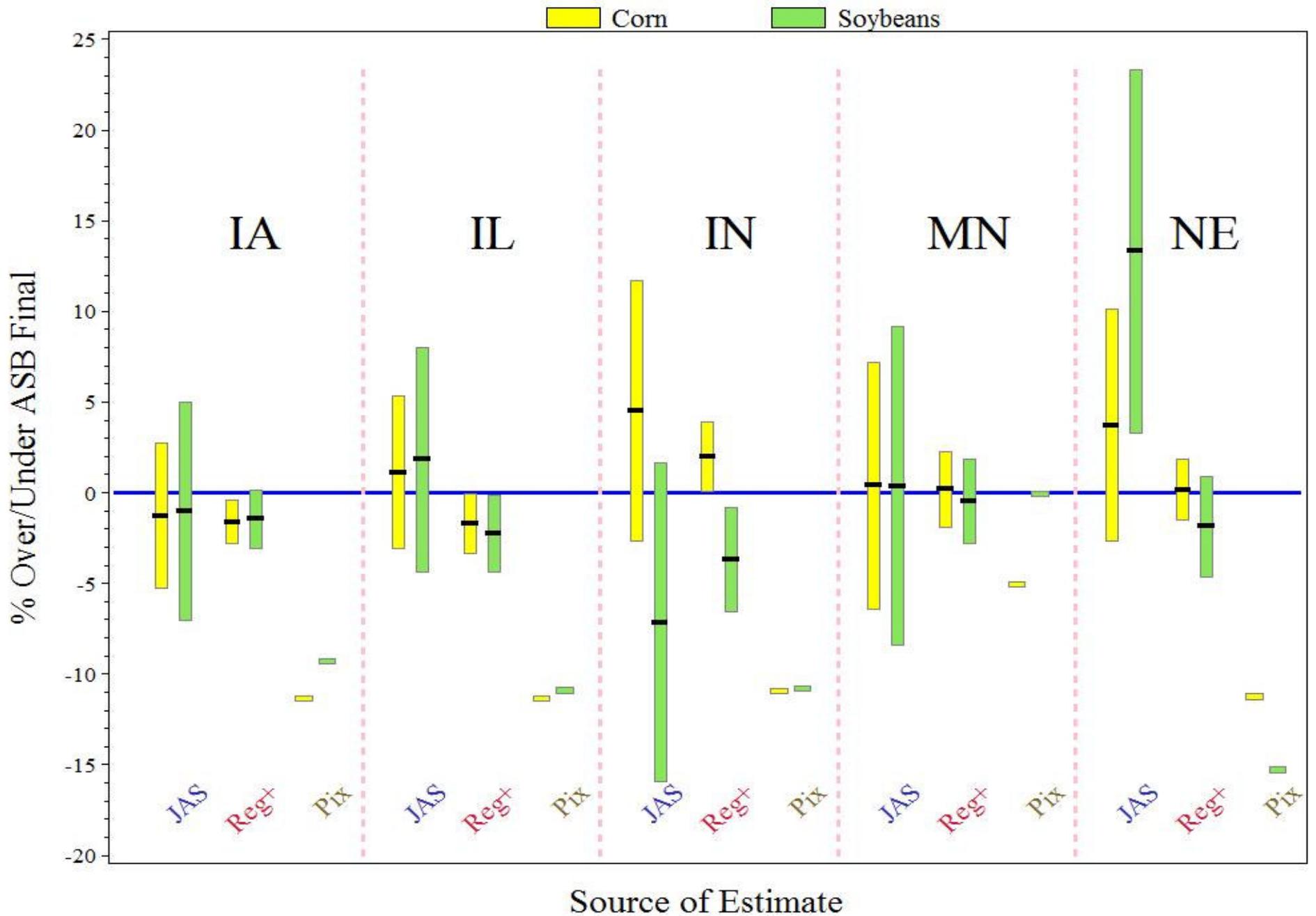
Using both CDL and JAS acreage results in estimates with reduced error rates over JAS alone

Outlier segment detection - correction or removal from regression analysis

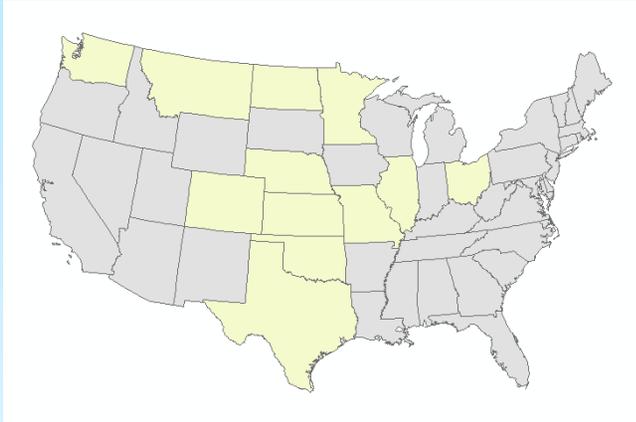


Acreage not just about counting pixels

2007 State Level Estimates +/- 2% CVs



CDL 2008 Status



Primary Wheat States



Primary Cotton States

- Operational Program
 - Early delivery of estimates
 - Winter Wheat - June
 - Corn and Soybeans - mid-August & mid-October
- Expand geographic scope?
 - Wheat states next priority
 - Cotton, Durum and Spring Wheat
- Derivatives?
 - Change detection
 - Crop rotation patterns

Thank You

Claire Boryan, Rick Mueller, Mike Craig, Dave Johnson, Bob Seffrin, Patrick Willis, Larry Beard, Zhengwei Yang and Lee Ebinger



www.nass.usda.gov
datagateway.nrcs.usda.gov



the one stop source of
natural resources data

Geospatial

DATA GATEWAY

The Geospatial Data Gateway provides One Stop Shop resources on environmental data from anywhere, to anywhere, to anyone. It allows you to choose your products, browse and select data, customize the format, and download or ship on CD or DVD.

SYSTEM

All products and services are available normally. Due to unavailability of data, orders with 14 days to complete. Use download other products awaiting NADP completion.

NADP 2003, 2004 and 2005 are unavailable due to hardware problems. For these products, please contact the data service site.

Effective 12-DEC-06, J1 for Step 1 and 2. The .NET and installed Here. In Items 2 & 3 on how to use the browser.